**Mustafa Sheikh**

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**SKILLS**

**Software:** Python | C/C++ | Git | MATLAB | Simulink | Julia |ASTC Vlab | Jira | Synopsys Virtualizer

**Engineering:** Agile | CAN | DFSS Black Belt | HIL | UML| dSPACE tools | Testing and Validation

**WORK EXPERIENCE**

**General Motors,** Milford, MI

Senior Virtual Hardware Engineer Nov2022 – Sept 2024 Utilized hardware virtualization to accelerate delivery of software for Software-Defined Vehicle platform.

•Championed and secured organizational buy-in for $2 million Synopsys Virtualizer based 'shift-left' approach to Wireless Connectivity Module development enabling exploratory early development.

•Led cross-functional development and delivery of Synopsys Virtualizer based Occupant Safety Module with test software, accelerating integration testing efforts by 4 months ahead of official software availability.

•Successfully launched next-generation ASTC Vlab based Central Gateway Module 8 months ahead of hardware schedule, driving concept-to-release progress and facilitating early software testing and integration.

•Leveraged expertise in virtual workflows to collaborate with product owners and release train engineers to integrate virtual hardware team into enterprise level agile framework.

•Led team of 12 engineers to deliver integrated virtual subsystems packages in predictable increments as part of in-house scaled agile strategy increasing transparency and resource allocation.

•Developed strategy to benchmark virtualization solutions serving as the basis for tool-chain decisions worth $100k+ .

Senior Connectivity Development Engineer Mar 2021 – Nov 2022

Developed features for legacy PHEV and EVs OnStar customers and next generation Telematics modules

- Spearheaded sourcing of Connectivity Module serving as the lynch-pin for the Software-Defined Vehicle platform by leading a cross-functional team to select best supplier based on internal metrics.

- Led multidisciplinary requirements development meetings for features representing $10s of millions in business value.

- Leveraged agile principles to preempt resolve issues while keeping leadership apprised for quick updates in strategy.

- Helped safeguard $10s of millions in revenue and critical safety features for hundreds of thousands of OnStar customers impacted by the 2G/3G sunset, by developing a mitigation plan with senior leaders.

**Aerotek (Contract at General Motors),** Warren, MI

System Integration Engineer Sep 2020 – Mar 2021

Vehicle Side CAN Integration lead for OnStar 2G/3G Sunset Adapter project for 100k + active legacy customers.

- Led cross-functional workshops between subject matter experts and suppliers to ensure project requirements were understood and timelines were on track.

- Proactively tackled development and implementation challenges in test setups and provided direction for creating electrical testing harnesses while mentoring junior engineers.

- Engaged system architects, subject experts, and suppliers to work on OTA related change requests for existing telematics modules to spearhead GM’s evolving OTA strategy.

**FAW US Research and Development,** Plymouth, MI

Autonomous Vehicle Controls Engineer Feb 2020 – Aug 2020

Part of a team of controls engineers, systems engineers, and integration engineers for L4 AV Planning and Control.

- Researched Vehicle Dynamics models and methods of Lateral Control for vehicles under typical highway scenarios and tested a LQR based Lateral Controller in MATLAB/Simulink.

- Independently developed and executed test plans for PID based longitudinal and LQR based lateral control algorithms using MATLAB, allowing team to catch and resolve issues before integration.

- Worked closely with integration team to integrate and debug Software Releases in CarMaker SIL environment.

- Developed Object Oriented MATLAB scripts to analyze CAN data from MobilEye EyeQ4 system enabling data visualization of time-series data.

**Molex Connected Mobility**, Rochester Hills, MI

End-Of-Line Test Development Engineer Jan 2019 – Feb 2020

Automation solution developer for electronic module production and launch activities for manufacturing services group.

- Developed multi-threaded Python scripts to flash Firmware on in-vehicle Ethernet Gateway subsystem automating a 60 minute error-prone manual process down to 15 minutes with logs.

- Designed and documented manufacturing test solutions using UML methods and engaged in peer-review to verify functionality ensuring first-time quality of solutions.

- Led identification and mitigation of risks in production lines during PFMEA discussions with a global cross-functional team for Ethernet Switch Modules.

- Partnered with senior leaders to address production rework issues, creating timely work instructions that improved reliability and reduced testing time.

**Ford Motor Company,** Dearborn, MI

Senior HIL Automation Engineer Apr 2013 - Nov 2018

Led design of Software and Hardware solutions for automated testing of highly distributed Infotainment, Body, and ADAS features as part of an interdisciplinary global team.

- Drove the integration and extension of HMI touchscreen automation tool created in Python. This enabled our lab to perform automated testing at scale for features with Ford Sync screen for the first time: saving 100s of human hours.

- Initiated, designed, and delivered dSPACE license restructuring efforts that freed up $80k worth of wasted software licenses while also allowing team to scale up from 10 to 40 engineers.

- Streamlined exploratory testing with standardized layouts in dSPACE ControlDesk using Python API, cutting setup time by over 70% on commonly used workstations.

- Boosted testing efficiency with a Python-based automated Electronic Latch feature testing fixture, enabling continuous 24/7 remote testing and accelerating product development.

**EASi Engineering (Contract at Ford),** Dearborn, MI

HIL Engineer Jun 2012 – Apr 2013

Supported HIL Testing and Automation activities for Infotainment HIL subsystem by integrating and extending AutomationDesk solutions.

- Improved Robotic HMI tester by decreasing setup time and maintainability of AutomationDesk interface by ~50% via code - refactoring and remapping data structures.

- Slashed HIL part costs by 75% through BOM management and parts procurement for 3 simultaneous vehicle platforms, involving hundreds of components.

- Presented automation solution demos to senior management.

**EDUCATION**

**BSc in Physics,** University of Windsor 2011

**BASc in Electrical Engineering,** University of Windsor 2009